

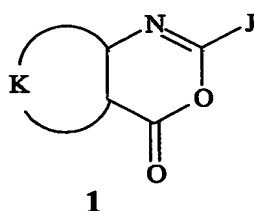
CLAIMS

What is claimed is:

1. A method for preparing a fused oxazinone, comprising:

5 contacting a carboxylic acid with a sulfonyl chloride and an isatoic anhydride in the presence of a tertiary amine to form the fused oxazinone, the nominal mole ratio of said sulfonyl chloride to said carboxylic acid being from about 1.0 to 1.5 and the nominal mole ratio of said isatoic anhydride to said carboxylic acid is from about 0.8 to 1.2.

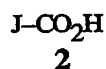
2. The method of Claim 1 wherein the fused oxazinone is a compound of Formula 1



wherein

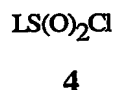
J is an optionally substituted carbon moiety; and

10 K is, together with the two contiguous linking carbon atoms, a fused phenyl ring or a fused 5- or 6-membered heteroaromatic ring, each ring optionally substituted; the carboxylic acid is a compound of Formula 2



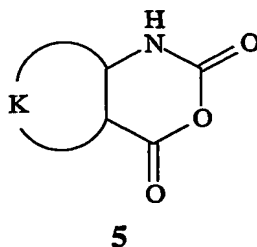
wherein J is defined as in Formula 1;

the sulfonyl chloride is a compound of Formula 4



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wherein L is selected from alkyl, haloalkyl, and phenyl optionally substituted with from one to three substituents independently selected from alkyl or halogen; and the isatoic anhydride is a compound of Formula 5



wherein K is defined as in Formula 1.

3. The method of Claim 2 wherein the nominal mole ratio of the isatoic anhydride to carboxylic acid is from about 0.9 to 1.1.

4. The method of Claim 3 wherein the nominal mole ratio of the tertiary amine to carboxylic acid is from about 2.0 to 4.0.

5. The method of Claim 2 wherein

J is C₁–C₆ alkyl, C₂–C₆ alkenyl, C₂–C₆ alkynyl, C₃–C₈ cycloalkyl or C₃–C₈ cycloalkenyl, each optionally substituted; or

J is a phenyl ring, a benzyl group, a benzoyl group, a 5- or 6-membered heteroaromatic ring, an aromatic 8-, 9- or 10-membered fused carbobicyclic ring system, an aromatic 8-, 9- or 10-membered fused heterobicyclic ring system or a 5- or 6-membered nonaromatic heterocyclic ring optionally including one or two ring members selected from the group consisting of C(=O), SO or S(O)₂, each optionally substituted.

6. The method of Claim 5 wherein

K is, together with the two contiguous linking carbon atoms, a fused phenyl ring optionally substituted with from one to four substituents independently selected from G, U, W or R¹³; or a fused 5- or 6-membered heteroaromatic ring optionally substituted with from one to three substituents independently selected from G, U, W or R¹³;

J is C₁–C₆ alkyl, C₂–C₆ alkenyl, C₂–C₆ alkynyl, C₃–C₈ cycloalkyl or C₃–C₈ cycloalkenyl, each optionally substituted with one or more substituents selected from the group consisting of R¹², halogen, CN, NO₂, hydroxy, C₁–C₄ alkoxy, C₁–C₄ alkylsulfinyl, C₁–C₄ alkylsulfonyl, C₁–C₄ alkylamino, C₂–C₈ dialkylamino, C₃–C₆ cycloalkylamino, and (C₁–C₄ alkyl)(C₃–C₆ cycloalkyl)amino; or

J is a phenyl ring, a benzyl group, a benzoyl group, a 5- or 6-membered heteroaromatic ring, an aromatic 8-, 9- or 10-membered fused carbobicyclic ring system, an aromatic 8-, 9- or 10-membered fused heterobicyclic ring system or a 5- or 6-membered nonaromatic heterocyclic ring optionally including one or two ring members selected from the group consisting of C(=O), SO or S(O)₂, each optionally substituted with from one to four substituents independently selected from G, U, W or R¹³;

each G is a 5- or 6-membered nonaromatic heterocyclic ring optionally including one or two ring members selected from the group consisting of C(=O), SO or S(O)₂, each optionally substituted with from one to four substituents independently selected from W;

each U is a phenyl ring, a benzyl group, a benzoyl group, a 5- or 6-membered heteroaromatic ring, an aromatic 8-, 9- or 10-membered fused carbobicyclic ring system, an aromatic 8-, 9- or 10-membered fused heterobicyclic ring system, each optionally substituted with from one to four substituents independently selected from W;

each W is independently C₁-C₄ alkyl, C₂-C₄ alkenyl, C₂-C₄ alkynyl, C₃-C₆ cycloalkyl, C₁-C₄ haloalkyl, C₂-C₄ haloalkenyl, C₂-C₄ haloalkynyl, C₃-C₆ halocycloalkyl, halogen, CN, NO₂, C₁-C₄ alkoxy, C₁-C₄ haloalkoxy, C₁-C₄ alkylthio, C₁-C₄ alkylsulfinyl, C₁-C₄ alkylsulfonyl, C₁-C₄ alkylamino, C₂-C₈ dialkylamino, C₃-C₆ cycloalkylamino, (C₁-C₄ alkyl)(C₃-C₆ cycloalkyl)amino or C₃-C₆ trialkylsilyl;

each R¹² is independently R¹⁹C(=E)-; R¹⁹C(=E)L-; R¹⁹LC(=E)-; (R¹⁹)LC(=E)L-; -O(Q)=P(OR¹⁹)₂; -SO₂LR¹⁸; or R¹⁹SO₂L-;

each R¹³ is B(OR¹⁷)₂; NH₂; SH; thiocyanato; C₃-C₈ trialkylsilyloxy; C₁-C₄ alkyldisulfide; SF₅; R¹⁹C(=E)-; R¹⁹C(=E)M-; R¹⁹MC(=E)-; (R¹⁹)MC(=E)M-; -OP(=Q)(OR¹⁹)₂; -S(O)₂MR¹⁹; R¹⁹S(O)₂M-;

each E is independently O, S, NR¹⁵, NOR¹⁵, NN(R¹⁵)₂, N-S=O, N-CN or N-NO₂;

each M is independently O, NR¹⁸ or S;

Q is O or S;

each R¹⁵ and each R¹⁹ is independently H; C₁-C₆ alkyl optionally substituted with one or more substituents selected from the group consisting of CN, NO₂, hydroxy, C₁-C₄ alkoxy, C₁-C₄ haloalkoxy, C₁-C₄ alkylthio, C₁-C₄ alkylsulfinyl, C₁-C₄ alkylsulfonyl, C₁-C₄ haloalkylthio, C₁-C₄ haloalkylsulfinyl, C₁-C₄ haloalkylsulfonyl, C₁-C₄ alkylamino, C₂-C₈ dialkylamino, CO₂H, C₂-C₆ alkoxycarbonyl, C₂-C₆ alkylcarbonyl, C₃-C₆ trialkylsilyl, and a phenyl ring optionally substituted with one to three substituents independently selected from W; C₁-C₆ haloalkyl; C₃-C₆ cycloalkyl; or a phenyl ring optionally substituted with from one to three substituents independently selected from W;

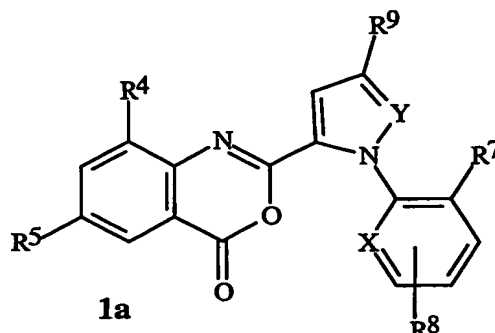
each R¹⁷ is independently H or C₁-C₄ alkyl; or

B(OR¹⁷)₂ can form a ring wherein the two oxygen atoms are linked by a chain of two to three carbons optionally substituted with one or two substituents independently selected from methyl or C₂-C₆ alkoxycarbonyl; and

each R¹⁸ is independently H, C₁-C₆ alkyl or C₁-C₆ haloalkyl.

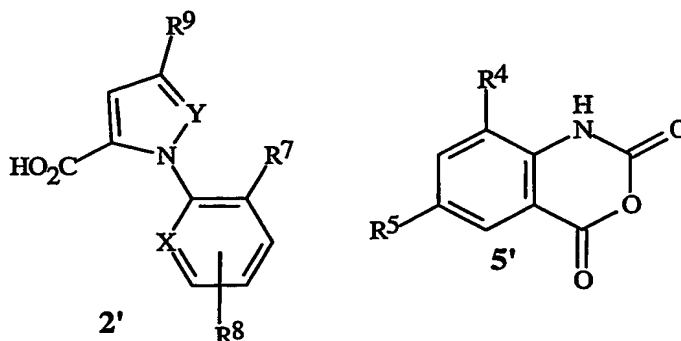
7. The method of Claim 6 wherein K is, together with the two contiguous linking carbon atoms, a fused phenyl ring optionally substituted with from one to four substituents independently selected from W or R¹³.

8. The method of Claim 2 wherein the compound of Formula 1 is a compound of Formula 1a



wherein

- 5 X is N or CR⁶;
 Y is N or CH;
 R⁴ is C₁–C₄ alkyl or halogen;
 R⁵ is H, C₁–C₄ alkyl, C₁–C₄ haloalkyl, CN or halogen;
 R⁶ and R⁷ are independently H, C₁–C₄ alkyl, C₁–C₄ haloalkyl, halogen, CN or C₁–C₄
 10 haloalkoxy;
 R⁸ is H, C₁–C₄ alkyl, C₂–C₄ alkenyl, C₂–C₄ alkynyl, C₃–C₆ cycloalkyl, C₁–C₄
 haloalkyl, C₂–C₄ haloalkenyl, C₂–C₄ haloalkynyl, C₃–C₆ halocycloalkyl,
 halogen, CN, NO₂, C₁–C₄ alkoxy, C₁–C₄ haloalkoxy, C₁–C₄ alkylthio, C₁–C₄
 alkylsulfinyl, C₁–C₄ alkylsulfonyl, C₁–C₄ alkylamino, C₂–C₈ dialkylamino,
 15 C₃–C₆ cycloalkylamino, (C₁–C₄ alkyl)(C₃–C₆ cycloalkyl)amino, C₂–C₄
 alkylcarbonyl, C₂–C₆ alkoxy carbonyl, C₂–C₆ alkylaminocarbonyl, C₃–C₈
 dialkylaminocarbonyl or C₃–C₆ trialkylsilyl;
 R⁹ is CF₃, OCF₃, OCHF₂, OCH₂CF₃, S(O)_pCF₃, S(O)_pCHF₂ or halogen; and
 p is 0, 1 or 2;
- 20 the compound of Formula 2 is a compound of Formula 2' and the compound of Formula 5 is
 a compound of Formula 5'



wherein the definitions of X, Y, R⁴, R⁵, R⁷, R⁸ and R⁹ are the same as for Formula 1a.

9. The method of Claim 8 wherein

X is N;

Y is N;

R⁴ is CH₃, F, Cl or Br;

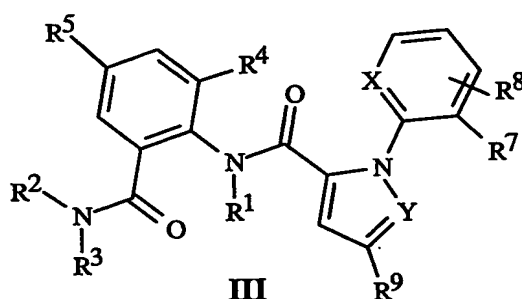
5 R⁵ is CF₃, CN, F, Cl, Br or I;

R⁷ is Cl or Br;

R⁸ is H; and

R⁹ is CF₃, OCHF₂, OCH₂CF₃, Cl or Br.

10. A method for preparing a compound of Formula III



10

wherein

X is N or CR⁶;

Y is N or CH;

R¹ is H;

15 R² is H or CH₃;

R³ is C₁-C₆ alkyl;

R⁴ is C₁-C₄ alkyl or halogen;

R⁵ is H, C₁-C₄ alkyl, C₁-C₄ haloalkyl, CN or halogen;

R⁶ and R⁷ are independently H, C₁-C₄ alkyl, C₁-C₄ haloalkyl, halogen, CN or C₁-C₄ haloalkoxy;

20

R⁸ is H, C₁-C₄ alkyl, C₂-C₄ alkenyl, C₂-C₄ alkynyl, C₃-C₆ cycloalkyl, C₁-C₄ haloalkyl, C₂-C₄ haloalkenyl, C₂-C₄ haloalkynyl, C₃-C₆ halocycloalkyl, halogen, CN, NO₂, C₁-C₄ alkoxy, C₁-C₄ haloalkoxy, C₁-C₄ alkylthio, C₁-C₄ alkylsulfinyl, C₁-C₄ alkylsulfonyl, C₁-C₄ alkylamino, C₂-C₈ dialkylamino, C₃-C₆ cycloalkylamino, (C₁-C₄ alkyl)(C₃-C₆ cycloalkyl)amino, C₂-C₄ alkylcarbonyl, C₂-C₆ alkoxy carbonyl, C₂-C₆ alkylaminocarbonyl, C₃-C₈ dialkylaminocarbonyl or C₃-C₆ trialkylsilyl; and

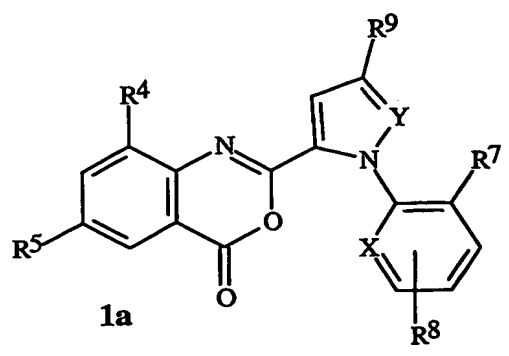
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R⁹ is CF₃, OCF₃, OCHF₂, OCH₂CF₃, S(O)_pCF₃, S(O)_pCHF₂ or halogen;

p is 0, 1 or 2;

30 using a compound of Formula 1a

75



characterized by:

preparing said compound of Formula 1a by the method of Claim 8.

11. The method of Claim 10 wherein

X is N;

Y is N;

R² is H or CH₃;

R³ is C₁–C₄ alkyl;

R⁴ is CH₃, F, Cl or Br;

R⁵ is CF₃, CN, F, Cl, Br or I;

R⁷ is Cl or Br;

R⁸ is H; and

R⁹ is CF₃, OCHF₂, OCH₂CF₃, Cl or Br.